Electric Resource Costs

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Overall Concerns

- These Cost Figures Could Be Benchmark for Renewable Portfolio Standard
- Figures Could Be Used to Make Suboptimal Policy Decisions
- Costs of Wind Are Overstated
- Costs of Combined Cycle are Understated

Combined Cycle Capital Costs

- No development, land acquisition, or permitting costs
  - CEC permits aren't free.
  - If wind turbines need working capital, insurance consultants, title insurance, etc., so do combined cycles
  - Development costs included for Wind, excluded for Combined Cycle
- The Cost of Emissions Offsets Is Missing for Fossil Generation

Dry vs. Wet Cooling

- CEC Staff figures clearly assume wet cooling
- There is no clear and explicit allowance for water costs associated with wet cooling
- The CEC is requiring dry cooling for a number of projects in siting cases.
- Dry cooling results in higher capital cost and lower output (MW) and efficiency on hot days.

O&M and Other Expenses

- O&M Appears to Be Low
  - Labor, insurance, and fixed O&M (Table C-9) totals $30/kW
  - Is $13 of the $17 of fixed O&M related to the overhaul?
- SCR Operations Costs Appear Understated
  - Very low cost of consumables and labor
  - 500 MW combined cycle SCR costs **ARE NOT** same as 100 MW CT in total dollars
  - Edison estimated SCR consumables costs in 1990s were over $1/MWh; CEC's estimates are less than 1 cent/MWh
- Likely that SCR catalyst will need replacement
- No Capital Additions to Plant
- No Inventory of Either Fuel or Spare Parts

Heat Rate

- 6800 Btu/kWh "new and clean" full load heat rate
- Factors that raise heat rate in real world
  - Start-up and ramping costs after outages
  - Degradation on hot days relative to ISO conditions (large with dry cooling, a lesser degree with wet cooling)
  - Degradation due to partial forced outages
  - Degradation between overhauls
  - Ongoing degradation remaining over life of plant after overhauls
- CDWR and other contracts > 6800 Btu/kWh
- 7300-7500 Btu/kWh heat rate reflects these factors

Gas Prices

- $11 price today provides a lesson to policy makers
- A forecast gas price is not a certain price
- Hedging Costs are Significant
  - $0.80/MMBtu (Edison 2001-2003)
  - $0.50/MMBtu (Wiser, LBL, 2002)
  - $0.005/kWh (about $0.80/MMBtu) (Wiser, LBL, longer term)
  - $0.70 - $1.00/MMBtu (seasonal storage estimate), Stoffel, Xcel Energy
  - $0.005/kWh expected scenario but higher in pessimistic scenario (Platts)

Wind Cost Reality Check

- If Staff's Wind Costs Were Correct, Then Why Did the California Power Authority's Receive Hundreds of MW of Bids Below the CEC Estimate?
- If Staff's Wind Costs Were Correct, Then Why Did SDG&E Receive Wind Bids Below Its Estimates?

Wind Costs – Specific Issues

- Only Technology with Development Costs
  - Development Costs are Extremely High -- 13% of Total
  - Details of Financing Costs Assume that Large Companies Don't Build Windmills
  - Development Costs Double-Count Interest During Construction
  - Title Insurance is almost 30% of the Cost of Land – What's Wrong with This Picture?
  - It Costs $375,000 to Permit a 100 MW wind farm, but nothing to permit a 500 MW combined cycle!
- Only Technology with Transmission O&M Costs